bio-protocol Preprint

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Torsional testing of tibiae

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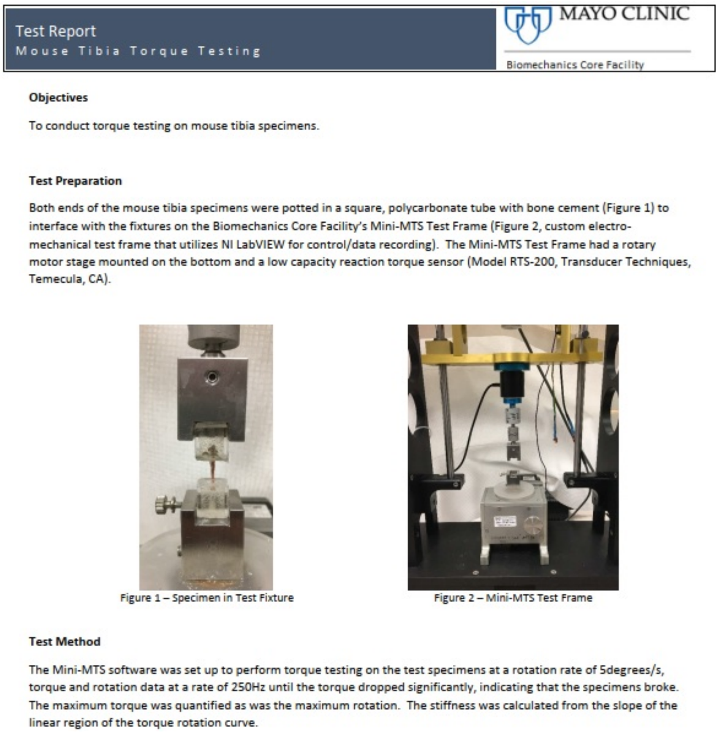
An abbreviated version of this protocol was published in eLIFE in Oct 2021

Modulation of fracture healing by the transient accumulation of senescent cells

DOI: 10.7554/eLife.69958

Detailed protocol



Test Report
Mouse Tibia Torque Testing

MAYO CLINIC
Biomechanics Core Facility

Objectives

To conduct torque testing on mouse tibia specimens.

Test Preparation

Both ends of the mouse tibia specimens were potted in a square, polycarbonate tube with bone cement (Figure 1) to interface with the fixtures on the Biomechanics Core Facility's Mini-MTS Test Frame (Figure 2, custom electro-mechanical test frame that utilizes NI LabVIEW for control/data recording). The Mini-MTS Test Frame had a rotary motor stage mounted on the bottom and a low capacity reaction torque sensor (Model RTS-200, Transducer Techniques, Temecula, CA).

Figure 1 – Specimen in Test Fixture

Figure 2 – Mini-MTS Test Frame

Test Method

The Mini-MTS software was set up to perform torque testing on the test specimens at a rotation rate of 5degrees/s, torque and rotation data at a rate of 250Hz until the torque dropped significantly, indicating that the specimens broke. The maximum torque was quantified as was the maximum rotation. The stiffness was calculated from the slope of the linear region of the torque rotation curve.

How to cite:(Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. Saul, D. , Farr, J. and Khosla, S. (2022). Torsional testing of tibiae. Bio-protocol Preprint. bio-protocol.org/prep2070.
2. Saul, D., Monroe, D. G., Rowsey, J. L., Kosinsky, R. L., Vos, S. J., Doolittle, M. L., Farr, J. N. and Khosla, S.(2021). Modulation of fracture healing by the transient accumulation of senescent cells. eLIFE. DOI: 10.7554/eLife.69958

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